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(54) Dispensing and dosing machine for dyestuffs, paints or the like, with a central unit for simultaneous dispensing of the dyestuffs and a nozzle cleaning system

(57) It is disclosed a dispensing and dosing machine for dyestuffs of the kind comprising a dispensing head (10) fitted with channels (14) connected at one end to dispensing devices and at the opposite end to a dyestuff discharge outlet, wherein said dispensing channels comprise a first portion connected to said dispensing devices and a second portion arranged at a certain angle with respect to said first portion and directed toward a discharge outlet, and wherein a multiple number of pins (16) are provided, one for each channel (14), having a diameter equal to the diameter of the channels and capable of inserting themselves into the terminal portion of said channels, to completely discharge the dyestuff and hermetically close said channels (14).

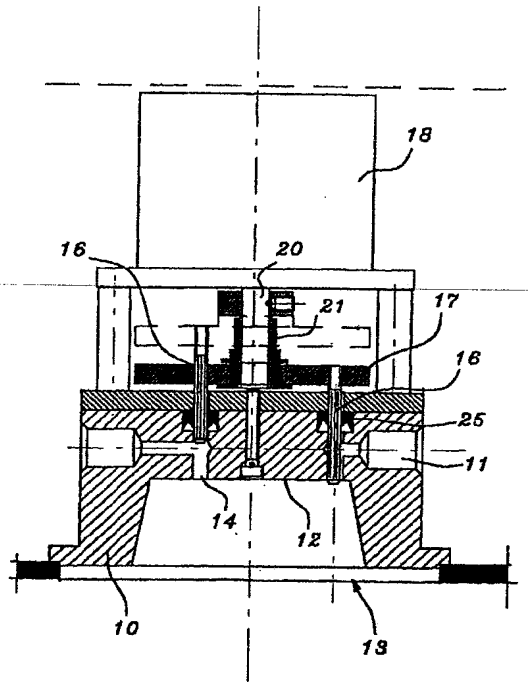

Fig. 3

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Description

[0001] This invention proposes a dispensing and dosing machine for dyestuffs, paints and the like, equipped with a central unit for simultaneous dispensing of one or more dyestuffs or viscous liquids and a nozzle cleaning system composed of a multiple number of axially sliding pins, moved by a stepwise motor and inserted into the dispensing nozzles from above so as to ensure a complete discharge of the dyestuff and form a seal preventing the liquid in the channels from drying out.

[0002] A number of devices for dispensing and dosing dyestuffs are known, which comprise a multiple number of tanks holding a different dyestuff base each, and dispensing devices capable of dispensing a predetermined quantity of dyestuff.

[0003] Some electronic systems control these dispensing devices so that each of them supplies the quantity of dyestuff needed to achieve the require tinting after being mixed.

[0004] Modern dyestuffs are prepared by mixing a certain quantity of dyestuff base such as for instance white or gray with a small percentage of one or more dyestuffs, in a combination designed to achieve the final tinting required.

[0005] These dyestuffs are employed in extremely limited quantities, often just a few drops, which means that a plugging in one or more of the dispensing channels affects the quantity of the discharged material and therefore the final tinting of the product.

[0006] Some dosing machines are already known, such as for instance those described in the US-patents no. 4,314,653 and 5,042,699 by the same Applicant.

[0007] The patent application of the Italian utility model no. M196U 0105 describes a dyestuff dispensing machine comprising a multiple number of dyestuff tanks arranged in a radial pattern around a central dispensing head equipped on its lateral wall with a multiple number of radial fittings for connecting to as many supply tanks, and on the bottom wall a discharge outlet connected to said fittings by passages provided inside the head.

[0008] The US-patent 5,449,028 describes a dyestuff dispensing device of a type comprising a multiple number of dispensing channels, each connected to a tank and arranged so as to discharge the dyestuff through some nozzles set in the lower wall, which provides for a removable lid for the sealing of said lower wall, shaped in a way to form a tightly sealed chamber surrounding the area for discharging the channels.

[0009] This sealing lid has been provided to limit the nozzles' contact with air, in an attempt to prevent or at least retard the drying out of the product left over in the discharge channels.

[0010] The dyestuff pastes of a water base or other kind in fact have an extremely limited drying time which is a considerable source of drawbacks, as some plugs of dried-out liquid form inside the dispensing channels and to affect the dispensing process.

[0011] This makes it necessary to ensure a rigorous cleanliness of the dispensing channels.

[0012] The known systems described above, in particular that of the US-patent no. 5,449,028 have been developed precisely in the attempt of limiting this drying-out phenomenon.

[0013] Despite the fact that appreciable results have been achieved, the problem is still not entirely solved, as even with the use of a sealing lid the dyestuff is still left behind in the channels, and if the machine is left standing for a certain period of time, dries out and re-proposes the problem.

[0014] A solution of this problem is now offered by this invention, which proposes a dispensing and dosing machine of a type comprising a multiple number of tanks directing the dyestuff toward a central dispensing head equipped with dispensing channels, a machine fitted with a number of pins coaxial with the terminal portion of the discharge channels and having the same diameter of the latter, which are inserted into these channels from the top so as to evacuate them completely and simultaneously achieve a tight seal.

[0015] This solution thus allows on one hand a complete discharge of the dyestuff without risking their partial entrapment in the channels, and on the other hand prevents the drying out of the material, due to the fact that these pins achieve a perfect seal on the entire surface of the dispensing channels.

[0016] This innovation will now be described in detail, for exemplifying but not limiting purposes, with reference to the enclosed figures in which:

- Figure 1 describes the machine of the invention in a simplified overall form,
- Figure 2 is a simplified assembled view of the tanks and of the dispensing units,
- Figure 3 is a cross-section of the dispensing unit equipped with the cleaning system according to the invention.

[0017] With reference to the Figures 1 and 2, the number 1 indicates the foundation of a machine mounting a multiple number of radially arranged units 2, each comprising a tank 3 for the dyestuff, a dosing pump 4 and a dispensing complex 5.

[0018] A platelet 6 is set above the dispensing and dosing units, attached to a multiple number of stems respectively connected to blades designed to remove the dyestuff from the tanks which aspirate a certain amount of dyestuff from these tanks and direct it toward the dispensing devices 8.

[0019] The latter are connected to a central discharging head, indicated in its overall form by the number 9 and illustrated in a vertical cross-section in Figure 3.

[0020] The number 10 indicates the body of the dispensing head, which exhibits a number of joints 11 for

connecting to the dispensing devices on its lateral sides, and on the lower wall 12 of a discharge outlet 13, a series of discharge channels connected to said joints 11.

[0021] The dispensing devices pick up the dyestuff from the tanks and pump it to the joints 11, which discharge it through the channels 14 so a to drop it into an underlying vessel.

[0022] The number 15 indicates the structure of the machine mounting the dispensing head.

[0023] A characteristic of the innovation is to provide a series of pin-type elements 11, one for each dispensing channel 14, attached to a platelet 17 set on top of the dispensing head and actuated by a step-wise motor 18 so as to move in an alternating motion in an essentially vertical direction.

[0024] The pins 16 have the same diameter of the channels 14 and are coaxial with the same.

[0025] The shaft 20 of the motor 18 is threaded and engages with a bushing 21 which is firmly attached to the pin supporting platelet 3.

[0026] The run of the pin supporting disc 17 is such as to take the latter from a raised position shown on the left side of Figure 3, in which the pins release the dispensing channels 14 thus allowing them to communicate with the joints 11, to a lowered position shown on the right side of the same Figure 3, in which the pins fit entirely into the channels 14, up to the point of reaching the lower wall 12 of the discharge outlet 13.

[0027] This descending motion of the pins leads to fully expelling the dyestuff and to simultaneously cleaning up the walls of the channels.

[0028] The pins' terminal portion will preferably be pointed so as to favor the detachment of even minimal quantities of dyestuff.

[0029] Moreover, each pin will preferably provide some annular gaskets 25, for instance of a lip-type, capable of ensuring a good seal and performing the function of perfectly cleaning the surface of the pin, whenever the latter is raised.

[0030] The operation is as follows.

[0031] When the product is to be dosed, the operator sets the quantity and type of the required dyestuff, by acting on certain electronic control devices of the machine.

[0032] The control determines the quantity of each dyestuff to be dispensed, and actuates the motor 18 to command the lifting of the disc 17 up to the point of moving the pins 16 above the passage connecting the channel 14 with the joints 11 (Figure 3 to the left).

[0033] At this point the dosing devices dispense the required quantity of each dyestuff according to a known technology, by discharging it from the outlet 13 through the channels 14.

[0034] Once the dosage has been completed, the control switches the motor 17 with the pins 16 to a reverse rotating motion, so that each of the pins penetrates into its respective channel 14.

[0035] During this motion the pins, whose diameter is exactly the same as the internal diameter of the channels, totally expel the residual dyestuff and clean up the walls.

[0036] Once the disc 17 with the pins 16 has terminated its descent, all channels remain perfectly closed and sealed, without affording the dyestuff any chance to come in contact with the air and thus to dry up.

[0037] This has produced a device for the simultaneous dispensing of dyestuffs, equipped with a central self-cleaning dispenser capable of avoiding all drawbacks due to the drying-out of the material in the dispensing channels, typical of the known art.

[0038] An expert in the trade may further provide for various executions of the same concept, all of which are however to be held as falling within the scope of this invention.

Claims

1. A dispensing and dosing machine for dyestuffs of a type comprising a dispensing head fitted with channels connected at one end to some dispensing devices and at the opposite end to a dyestuff discharge outlet, characterized in that it provides for means capable of fitting at least into the terminal portion of said dispensing channels so as to fully expel the residual dyestuff, while the said means go to fully occupy said terminal portion of the dispensing channels.

2. A dispensing and dosing machine according to claim 1, in which said dispensing channels comprise a first portion connected to said dispensing devices and a second portion arranged at a certain angle with respect to said first portion and directed toward a discharge outlet, characterized in that it provides for a multiple number of pins, one for each channel, having a diameter equal to the diameter of the channels and capable of inserting themselves into the terminal portion of said channels.

3. A dispensing machine according to claim 2, characterized in that said dispensing channels comprise an essentially horizontal first portion connected to some dispensing devices, and an essentially vertical second portion directed toward the bottom, characterized in that said pins are inserted from the top into said second portion of the dispensing channels.

4. A dispensing and dosing machine according to claim 3, characterized in that said pins are mounted on a mobile platelet between a position in which said pins are lifted up to the point of positioning themselves above said first essentially horizontal portion of the dispensing channels and a second position in which said pins are lowered down to the

point of bringing themselves, with their lower extremity, to a position flush with the outlet of said dispensing channels.

5. A dispensing machine according to the foregoing claims, characterized in that said pins have a beveled and pointed extremity, so as to favor the detachment of even tiny quantities of dyestuff.

6. A dispensing machine according to the foregoing claims, in which said platelet is moved, with the aid of a threaded shaft, by a stepwise moving motor.

Fig. 1

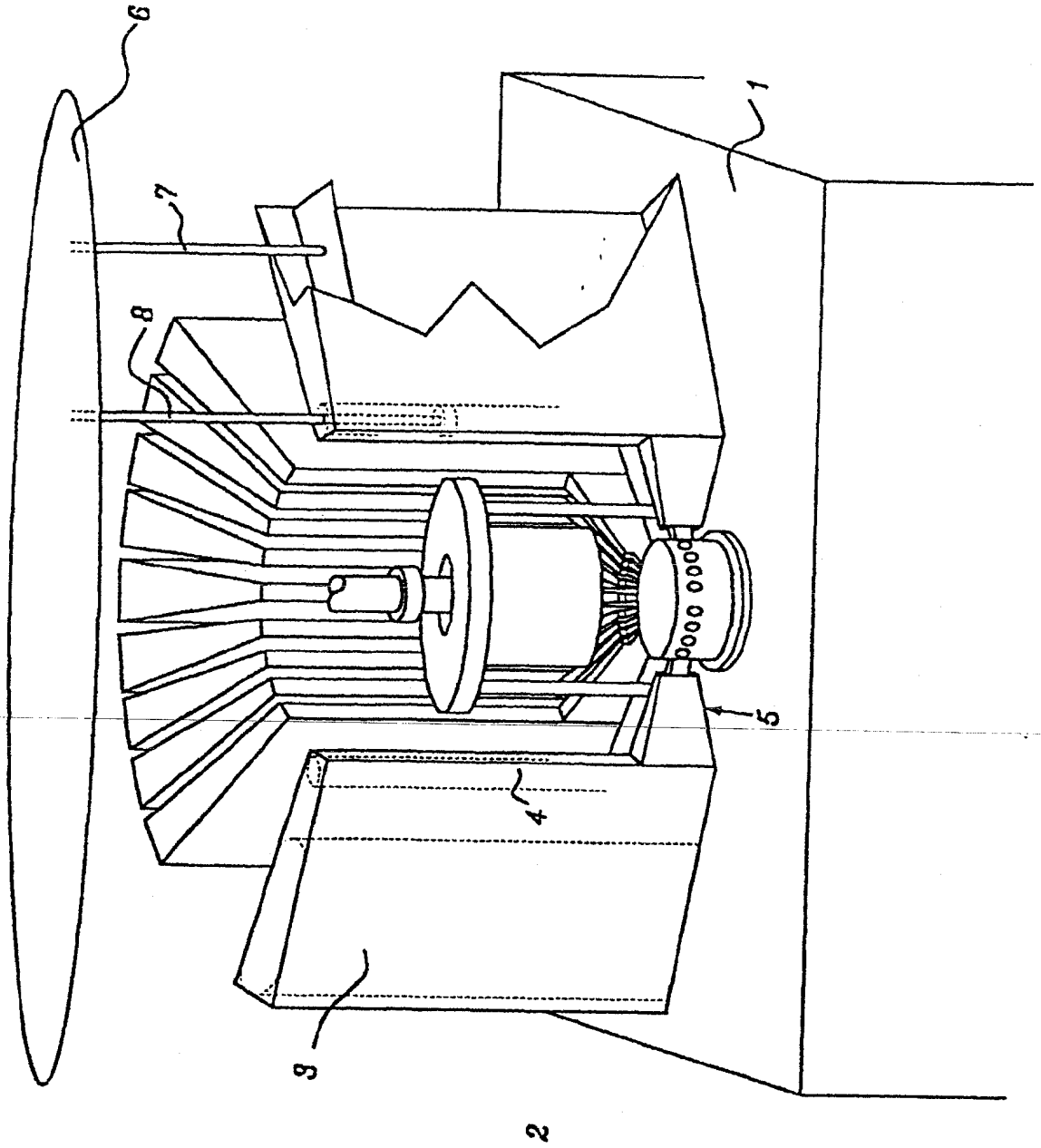
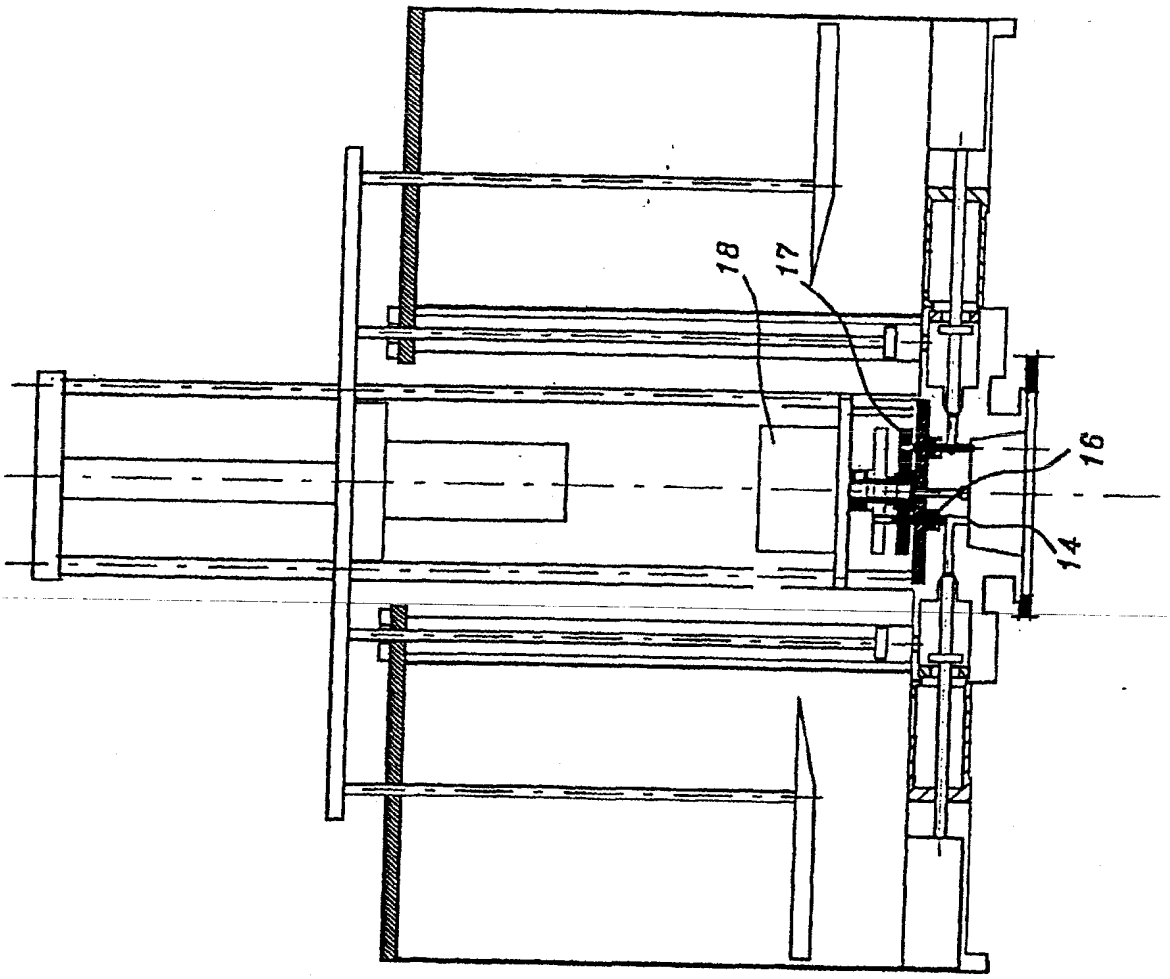


Fig. 2



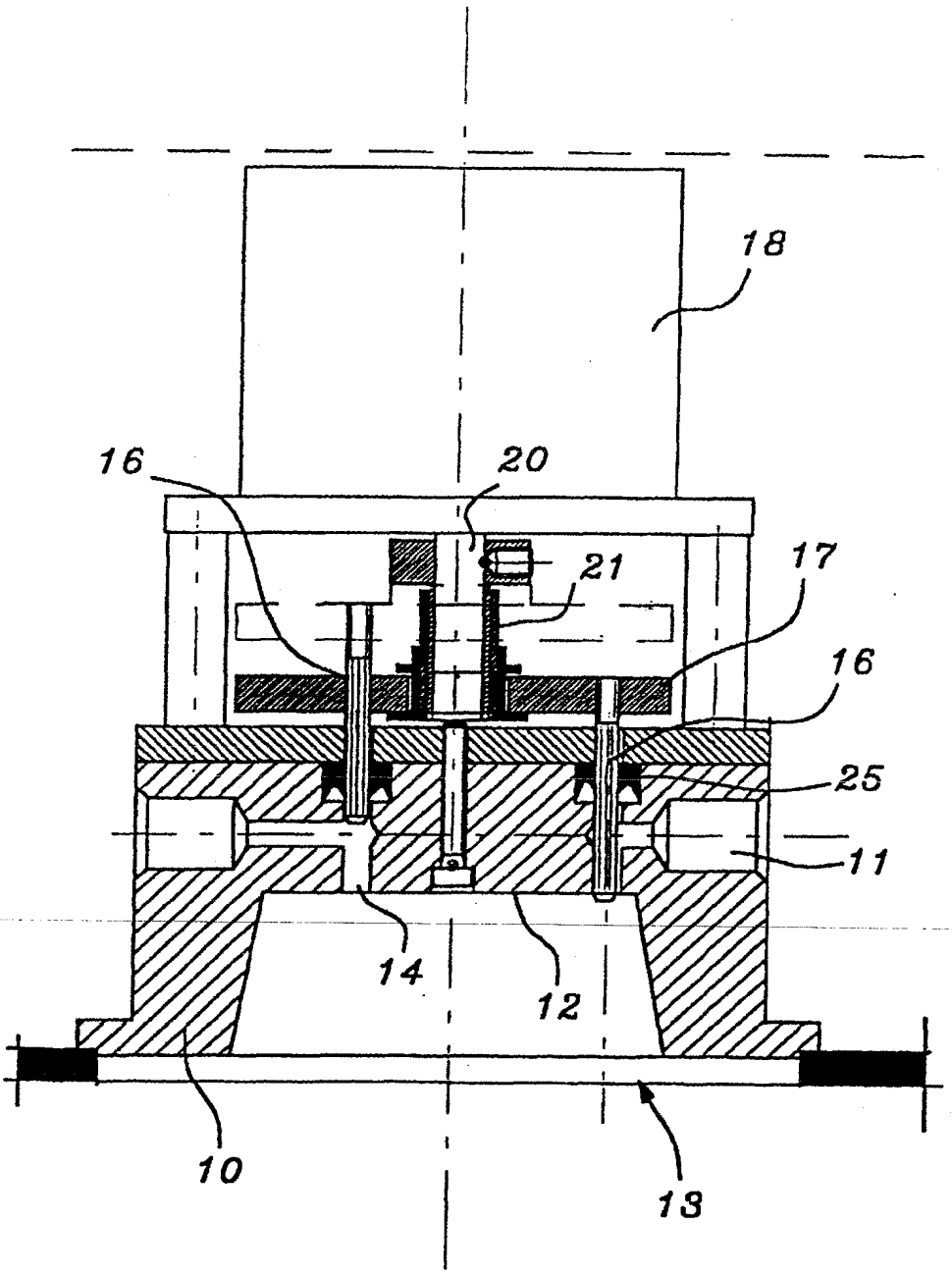


Fig. 3

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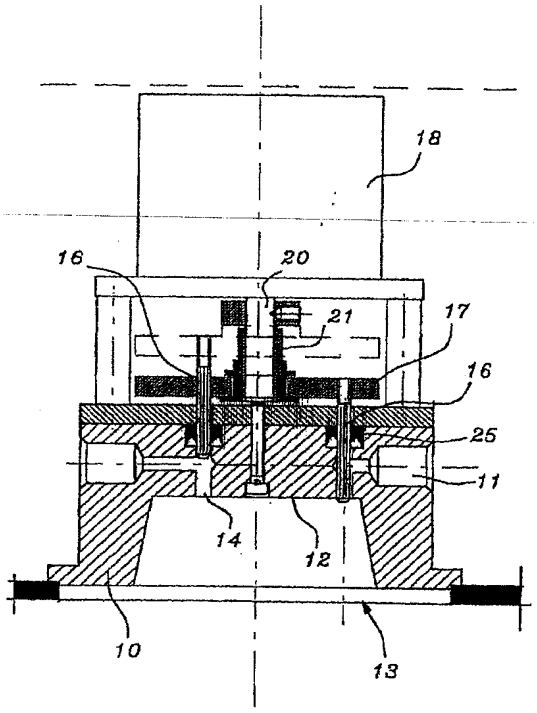

Fig. 3

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EUROPEAN SEARCH REPORT

Application Number
EP 00 11 3660

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	18 November 2002	Philpott, G

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X : particularly relevant if taken alone
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